

AMENDMENTS TO THE CLAIMS

Claim 1 (original) A non-aqueous rechargeable lithium battery having reduced capacity fade rate during cycling, the battery including a lithium insertion compound cathode, a lithium or lithium compound anode, a separator, a non-aqueous electrolyte including a lithium salt dissolved in a non-aqueous solvent, and an amount of lithium borate dispersed on the surface of the active cathode material, wherein:

- (a) the lithium insertion compound is a lithium transition metal oxide with LiCoO_2 type structure; and
- (b) the lithium borate is mixed with the lithium insertion compound cathode and heated to a temperature in the range between 250°C to less than 650°C.

Claim 2 (currently amended) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein the mixture of lithium borate and the lithium insertion compound cathode is heated ~~at greater or equal to 250°C.~~ to a temperature in the range of 250°C to 450°C.

Claim 3 (original) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein an aqueous lithium borate solution is mixed with the lithium insertion compound cathode.

Claim 4 (original) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein a small amount of lithium borate and the lithium insertion compound cathode are dry mixed in a jar mill with media.

Claim 5 (currently amended) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein the amount of lithium borate is greater than about 0.01%, but less than 2% of the weight of the lithium insertion compound cathode.

Claim 6 (cancelled)

Claim 7 (original) A non-aqueous rechargeable lithium battery as claimed in claim 61 wherein the lithium transition metal oxide is a member of the solid solution series $\text{LiNi}_x\text{Co}_{1-x}\text{O}_2$ ($0 \leq x \leq 1$).

Claim 8 (original) A non-aqueous rechargeable lithium battery as claimed in claim 61 wherein the lithium transition metal oxide is LiCoO_2 .

Claim 9 (original) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein the anode comprises a carbonaceous insertion compound.

Claim 10 (original) A non-aqueous rechargeable lithium battery as claimed in claim 9

wherein the carbonaceous insertion compound is graphite.

Claim 11 (original) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein the lithium salt is LiPF_6 .

Claim 12 (original) A non-aqueous rechargeable lithium battery as claimed in claim 1 wherein the non-aqueous solvent comprises a cyclic and/or linear organic carbonate.

Claim 13 (original) A non-aqueous rechargeable lithium battery as claimed in claim 12 wherein the nonaqueous solvent is a mixture of ethylene carbonate, propylene carbonate, diethyl carbonate, ethyl methyl carbonate, and dimethyl carbonate.

Claims 14-26 (cancelled)

Claim 27 (new) A non-aqueous rechargeable lithium battery having reduced capacity fade rate during cycling, the battery including a lithium insertion compound cathode, a lithium or lithium compound anode, a separator, a non-aqueous electrolyte including a lithium salt dissolved in a non-aqueous solvent, and an amount of lithium borate dispersed on the surface of the active cathode material, wherein:

- (a) the amount of lithium borate is in the range of about 0.01% to about 0.15% of the weight of the lithium insertion compound; and

(b) the lithium borate is mixed with the lithium insertion compound and heated to a temperature in the range between 250°C to less than 650°C.

Claim 28 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27 wherein the mixture of lithium borate and the lithium insertion compound cathode is heated to a temperature in the range of 250°C to 450°C.

Claim 29 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27 wherein an aqueous lithium borate solution is mixed with the lithium insertion compound cathode.

Claim 30 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27 wherein a small amount of lithium borate and the lithium insertion compound cathode are dry mixed in a jar mill with media.

Claim 31 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27 wherein the lithium insertion compound cathode is a lithium transition metal oxide cathode with LiCoO_2 type structure.

Claim 32 (new) A non-aqueous rechargeable lithium battery as claimed in claim 31 wherein the lithium transition metal oxide is a member of the solid solution series

$\text{LiNi}_x\text{Co}_{1-x}\text{O}_2$ ($0 \leq x \leq 1$).

Claim 33 (new) A non-aqueous rechargeable lithium battery as claimed in claim 31
wherein the lithium transition metal oxide is LiCoO_2 .

Claim 34 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27
wherein the anode comprises a carbonaceous insertion compound.

Claim 35 (new) A non-aqueous rechargeable lithium battery as claimed in claim 34
wherein the carbonaceous insertion compound is graphite.

Claim 36 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27
wherein the lithium salt is LiPF_6 .

Claim 37 (new) A non-aqueous rechargeable lithium battery as claimed in claim 27
wherein the non-aqueous solvent comprises a cyclic and/or linear organic carbonate.

Claim 38 (new) A non-aqueous rechargeable lithium battery as claimed in claim 37
wherein the nonaqueous solvent is a mixture of ethylene carbonate, propylene
carbonate, diethyl carbonate, ethyl methyl carbonate, and dimethyl carbonate.